REMARKS

Page 20, lines 14-16 of the specification were objected to because the cited section refers to a hash table that maps a token ID to an array but FIG. 5 shows that the hash table maps a token to a token ID. Applicant notes that the cited section is not referring to FIG. 5. Instead, the cited section is referring to FIG. 8, which is discussed more fully beginning on line 20 of page 20. In particular, the hash table discussed in lines 14-16 is partial parse hash table 800 found in FIG. 8. Thus there is no confliction between the Figures and the specification.

Page 20, line 22 to page 21, line 16 was also objected to because FIG. 8 did not show any meaningful relationship between the word "meeting" and the hash table. The partial parse hash table stored for the word "meeting" includes pointers to partial parses that can be completed by various tokens A, B, C and D. Although the word "meeting" may form one of these tokens, this is not required. Instead, the pointers to the partial parses provide a fast lookup for partial parses that can be extended by various tokens. For example, if the word "meeting", which is a token, activates another token like token B, then the partial parse hash table can be used to quickly identify all of the structures that can be extended by token B using the pointer stored for the word "meeting". Although such a relationship between "meeting" and the token B is possible, it is not necessary. The tokens A, B, C and D can be completely unrelated to the word "meeting" or can be formed entirely or in part by the word "meeting". The partial parse hash table stored for a word simply provides pointers to all of the partial parsers that can be extended before beginning processing of that word.

Claim 20 was objected to because the term "staring position" should have been "starting position." Claim 20 has been amended to correct this error.

Claims 1-3 were rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. With the present amendment, claim 1 has been amended to indicate that the method of parsing text to form a logical representation of the text is performed in a computing device. Thus the claim includes a functional interrelationship to hardware in a computer related device.

CLAIMS 1-5

Claims 1-5 were rejected under 35 U.S.C. § 102(e) as being anticipated by Call (U.S. Patent Application 2002/0165707 A1).

Independent claim 1 provides a method of parsing text in a computing device to form logical representation of the text. The method includes selecting a token, identifying an integer that represents the selected token, and utilizing the integer to identify at least one non-terminal token of the logical representations that begins with the selected token.

Call does not show or suggest the invention of claim 1 because it does not show or suggest utilizing an integer to identify a non-terminal token of a logical representation. In the Office Action, paragraph 91 and FIG. 2 of Call were cited as showing a step of utilizing an integer to identify at least one token of a logical representation that begins with a selected token. However, the cited section makes no reference to utilizing an integer to identify at least one non-terminal token of a logical representation.

The only logical representation provided in Call is a binary tree, which is used to speed the tokenization of substrings into term numbers. Thus, the binary tree consists of references to words with a separate binary tree for each letter of the alphabet. At each node in a tree, the current word is compared to the word at the node to determine if they are the

same. If they are the same, the current word receives the same integer value as the word at the node. If the search of the binary tree does not result in a match between the two words, a new integer value is generated for the word. Since the integer value is not produced until after the search of the binary tree is complete, the integer cannot be used to identify at least one non-terminal token of the logical representation that begins with the selected token. As such, Call does not show or suggest the invention of claim 1 or claims 2-5 which depend therefrom.

Claim 2 is additionally patentable over Call. In claim 2, identifying an integer comprises identifying an integer that points to an identifier array, where each cell in the identifier array provides a token identifier for a token that begins with the selected token. Call does not show or suggest such an identifier array.

In the Office Action, FIG. 2 and Table 1 were said to show this structure with each row of the L R O arrays corresponding to a cell. However, claim 2 requires that each cell in the identifier array provide a token identifier for a token that begins with the selected token. In the L R O arrays, the rows are for different words. Thus, each row in the L R O arrays is not related to a single selected token but instead each row is related to a separate word. This is substantially different from the identifier array of claim 2. As such, Call does not show or suggest the invention of claim 2.

Claim 4 is additionally patentable over Call. In claim 4, each token identifier integer comprises a table identifying portion and an offset portion, where the table identifying portion identifies a table that contains an array of definitions for tokens and the offset portion identifies a location of the definition for the token. Call does not show or suggest token identifier integers that have a table identifying portion and an offset portion.

In the Office Action, it was asserted that the array 310 is identified by the symbolic name "data" which is interpreted as a table identifying portion. However, the name "data" does not form part of an integer used to represent words in Call. In fact, the symbolic name "data" cannot form part of an integer since data is a string and not an integer. As such, claim 4 is additionally patentable over Call.

Claim 5 is also additionally patentable over Call. In claim 5, each cell in the identifier array provides an indication of a rule in which the token represented by the token identifier integer begins with the selected token. Call makes no mention of rules in which a token represented by a token identifier integer begins with a selected token. Paragraphs 44-48 of Call were cited as showing this limitation. However, Call makes no mention of a cell that provides an indication of a rule in which a token begins with a selected token. As such, claim 5 is additionally patentable over Call.

CLAIMS 6-10

Claims 6-10 were rejected under 35 U.S.C. § 102(e) as being unpatentable over Call.

Independent claim 6 provides a computer readable medium having a data structure used in parsing text. The data structure comprises a table of integers where each integer represents a token. The data structure further includes a table of arrays, where each integer in the table of integers acts as a pointer to a separate array in the table of arrays and where each cell in an array contains a token identifier for a token activated by the token represented by the integer that points to the array.

Call does not show or suggest the invention of claim 6 because it does not show a table of arrays where each integer that represents a token points to a separate array. In particular, the L R O arrays do not provide a separate array for

each integer. As such, claim 6 and claims 7-10, which depend therefrom, are patentable over Call.

Claim 9 is additionally patentable over Call. In claim 9, each token identifier points to a definition for a token that includes a sequence of token identifiers that can be parsed to form the token defined by the token definition. Call does not show or suggest a token definition that includes a sequence of token identifiers that can be parsed to form the token defined by the token definition. In particular, the L R O and T arrays do not form a token definition that comprises a sequence of token identifiers that can be parsed to form a token. Call in fact has no concept of parsing a sequence of tokens to form a token. As such, claim 9 is additionally patentable over Call.

CLAIMS 11-14

Claims 11, 13 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Call in view of Brash (U.S. Patent Number 5,960,384). Claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Call in view of Brash and further in view of Messerly et al. (U.S. Patent Number 5,960,384, hereinafter Messerly).

Independent claim 11 provides a method of parsing text to form a tokenized representation of the text. The method includes selecting a word from the text and forming a partial parse of a token based on the selected word. An item that is needed to extend the partial parse is then identified. A pointer to the partial parse is placed in a table associated with the next word in the text, where the pointer is mapped from the item that is needed to extend the parse.

The invention of claim 11 is not shown in the combination of Call, Brash and Messerly. In particular, none of these references shows or suggests placing a pointer to a partial parse in a table associated with a next word in the text. Since

none of these references show this feature, claim 11 and claims 12-14, which depend therefrom, are patentable over Call, Brash and Messerly.

Claim 12 is additionally patentable over the combination of Call, Brash and Messerly. In claim 12, placing a pointer to a partial parse comprises placing a pointer to an array, wherein the array contains at least two partial parses that can be extended by a same item. The combination of references does not show this feature.

In the Office Action, FIGS. 17-18 and column 12, lines 6-39 of Messerly were cited as showing this feature. However, the cited sections do not provide an array that contains at least two partial parses that can be extended by a same item. Instead, they show a division of a logical form query into two sub-queries. This is completely different from an array that contains at least two partial parses that can be extended by a same item. As such, claim 12 is additionally patentable over Call, Brash and Messerly.

CLAIMS 15-19

Claims 15, 17 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Call in view of Brash. Claims 16 and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Call in view of Brash and further in view of Messerly.

Independent claim 15 is directed to a computer-readable medium having a data structure used in parsing. The data structure includes a set of mappings, where each mapping is associated with an item needed to extend a partial parse of a token. The data structure further includes at least one pointer for each mapping. Where each pointer identifies at least one partial parse structure that needs the item associated with the mapping.

The combination of Call, Brash and Messerly does not show or suggest the invention of claim 15. In particular, none of the references show a pointer identifying at least one partial parse structure that needs an item associated with a mapping. No sections of Call, Brash or Messerly was cited as showing a pointer that identifies at least one partial parse structure that needs an item. As such, claim 15, and claims 16-19, which depend therefrom, are patentable over the cited combination.

Claim 16 is additionally patentable over the cited references. In claim 16, the pointer points to an array identifying two different partial parse structures. None of Call, Brash or Messerly show or suggest a pointer that points to an array that identifies two different partial parse structures.

Claim 19 is additionally patentable over the cited references. In claim 19, each mapping maps from an integer that represents the item needed to extend a partial parse. None of Call, Brash or Messerly show or suggest mapping from an integer to identify at least one partial parse structure that needs the item represented by the integer. As such, claim 19 is further patentable over the cited references.

CLAIMS 20-24

Claims 20-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Call in view of Brash.

Claim 20 is directed to a method of parsing text to form a representation of the text. The representation has structures that span substrings of words in the text where each structure has a token at its root. The method includes identifying a first structure that spans a first substring of words in the text and has a first token at its root. The first structure is indexed by the first token and the starting position and ending position of the first substring. A second structure that spans the first substring of words and has the first token

at its root is then identified. Using the first token and the starting position and ending position of the first substring, the first structure is located. One of the first structure and the second structure is then removed from further consideration in the formation of the representation of the text.

The combination of Call and Brash does not show or suggest the invention of claim 20, because Call and Brash do not show a step of identifying a second structure that spans the first substring of words and has the first token as its root.

In the Office Action, it was asserted that paragraph 54 of Call showed identifying a second structure that spans the first substring of words and has the first token at its root because it generates a separate tree for all terms beginning with a same character, where the character was interpreted in the Office Action as the root of the tree.

Although Call shows a separate binary tree for each letter of the alphabet, it does not show multiple trees for a single letter of the alphabet. As such, it does not show two structures that span a first substring of words and that both have a first token as their root. Instead, each binary tree in Call has a separate root associated with a separate character. As such, there is only one tree with the same token at its root in Call.

This is substantially different from the invention of claim 20 where two structures that span the same substring of words and have the same first token at their roots are identified and then one of the structures is removed from further consideration. Neither Call nor Brash show or suggest identifying two such structures and then removing one of the structures from further consideration. As such, claim 20 and claims 21-24, which depend therefrom, are patentable over the combination of Call and Brash.

Claim 23 is additionally patentable over the combination of Call and Brash. In claim 23, removing the first structure comprises removing the first structure so that it is no longer indexed by the first token and the staring position and ending position of the first substring and indexing the second structure by the first token and starting position and ending position of the first substring. Neither Call nor Brash make any mention of no longer indexing a first structure by a first token and a starting position and ending position of a substring and then indexing a second structure by the first token and the staring position and ending position of the first substring. As such, claim 23 is additionally patentable over Call and Brash.

CLAIMS 25-26

Claims 25-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Call in view of Brash.

Claim 25 provides a computer readable medium having a data structure that includes a first address field containing a token. The first address field indexes an entry field that designates parse structures, where the parse structures in an entry field have the token of the first address field as their root node. The data structure further includes a second address field for further indexing the entry field where the second address field contains a representation of words spanned by a parse structure.

Claim 25 is not shown or suggested by the combination of Call and Brash. In particular, neither Call nor Brash provide two address fields that index an entry field that designates a parse structure, where one of the address fields contains a token and the other address field contains representation of words spanned by the parse structure. Since neither reference shows or suggests a data structure with two such address fields, claims 25 and 26 are patentable over the combination of Call and Brash.

CLAIM 27

Claim 27 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Call in view of Bennett et al. (U.S. Patent Number 6,615,172, hereinafter Bennett).

In claim 27, a method of parsing text is provided. Under the method, a selected token is converted into a token ID. A first portion of the token ID is used to identify a table containing definitions for tokens of the same type as the selected token. A second portion of the token ID is used to locate the definition for the selected token in the identified table. The definition for the selected token is then used as part of a method of identifying a parse structure.

The combination of Call and Bennett does not show or suggest the invention of claim 27, because neither reference shows or suggests using a first portion of a token ID to identify a table and a second portion of the token ID to locate a definition for the selected token in the identified table.

In the Office Action, it was asserted that the symbolic name "data" used to refer to array 310 formed a first portion of a token ID. Applicant respectfully disputes this because the symbolic name "data" does not identify a table containing definitions for tokens. Instead, the "data" array is simply an array of integer values. It does not contain definitions for tokens. Further, Table A and Table B are not identified in any way by the "data" array. Table A and Table B are tables that are filled with search criteria used to search a document. The "data" array does not point to Table A or Table B.

As such, Call and Bennett do not show or suggest a token ID that has a first portion that can be used to identify a table containing definitions for tokens and a second portion that is used to locate the definition for a selected token. As such, claim 27 is patentable over Call and Bennett.

CLAIM 28

Claim 28 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Call in view of Bennett.

Under claim 28, a computer-readable medium has a data structure used in parsing text. The data structure includes a collection of tables where each table is associated with a type of token and each table comprises a collection of definitions for tokens of the type. The data structure further includes a set of token IDs, where each token ID represents a separate token. The token ID includes a first part that indicates a table that contains the definition for the token represented by the token ID and the second part that indicates a location of the definition of the token represented by the token ID within the table identified by the first part.

The combination of Call and Bennett do not show or suggest the invention of claim 28 for a number of reasons. First, neither Call nor Bennett show or suggest a collection of tables, where each table is associated with a type of token and each table comprises a collection of definitions for tokens of the type. In addition, neither references shows token IDs where the first part of the token ID indicates a table that contains a definition for the token represented by the token ID and a second part indicates the location of the definition of the token represented by the token ID within the table identified by the first part. Since neither Call nor Bennett show these limitations, claim 28 is patentable over the combination of Call and Bennett.

CONCLUSION

In light of the above remarks, claims 1-28 are patentable over the cited references. Reconsideration and allowance of the claims is respectfully requested.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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